



US006731954B1

(12) **United States Patent**
Katz

(10) **Patent No.:** US 6,731,954 B1
(45) **Date of Patent:** May 4, 2004

(54) **METHOD OF IMPROVING RADIO CONNECTION QUALITY**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 264 days.

(21) Appl. No.: 09/676,729

(22) Filed: Sep. 29, 2000 ✓

Related U.S. Application Data

(63) Continuation of application No. PCT/FI99/00263, filed on Mar. 30, 1999.

Foreign Application Priority Data

Mar. 31, 1998 (FI) 980725

(51) Int. Cl.⁷ H04B 1/38

(52) U.S. Cl. 455/562.1; 455/517; 342/367

(58) Field of Search 455/562, 63, 65, 455/67.3, 78, 69, 277.1, 277.2, 278.1, 284, 507, 517, 446, 561, 447, 456.4, 550; 342/367, 359, 360, 372, 373

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ABSTRACT

The invention relates to a method of improving radio connection (170) quality in a cellular radio network and a cellular radio network. The cellular radio network comprises a base station system (126) and subscriber terminals (150). Between the base station system (126) and the subscriber terminal (150) there is a bidirectional radio connection (170) using a directional antenna beam (304, 306). In the method, a direction of arrival (302A) of the antenna beam (304A) directed on the basis of a radio signal (304A) received uplink, transmitted by the subscriber terminal (150) is formed in the base station system (126). The base station system (126) transmits a radio signal (306) downlink to the subscriber terminal (150) in the direction of transmission (308) formed on the basis of the direction of arrival (302A). In forming the direction of transmission (308) a preknown number (L) of previously formed directions of arrival (402, 302C, 302B, 302A) are utilized. In accordance with the invention, when forming the direction of transmission (308) each previously formed direction of arrival (402, 302C, 302B, 302A) is weighted in inverse proportion to the temporal distance of the direction of arrival (402, 302C, 302B, 302A) from a known reference time instant (302A). The reference time instant is, for instance, the forming instant (302A) of the latest direction of arrival.

D.r of arrival

Form d.r of Xm 33.03

30 Claims, 4 Drawing Sheets